

CLAIMS

What is claimed is:

1. A non-aqueous electrolyte battery comprising: a positive electrode, a negative
5 electrode, and a non-aqueous electrolyte, the positive electrode having a positive
electrode active material-containing layer formed on a positive electrode current collector
and containing an olivine-type lithium phosphate as a positive electrode active material,
characterized in that:

the positive electrode current collector has a thickness of less than 20 μm , and a
10 surface of the positive electrode current collector that is in contact with the positive
electrode active material-containing layer has a mean surface roughness R_a of greater
than 0.026 μm .

2. The non-aqueous electrolyte battery according to claim 1, wherein the
15 olivine-type lithium phosphate is lithium iron phosphate.

3. The non-aqueous electrolyte battery according to claim 1, wherein the
positive electrode current collector is an aluminum foil subjected to a roughened process
and has a mean surface roughness R_a of less than 0.20 μm .

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4. The non-aqueous electrolyte battery according to claim 2, wherein the
positive electrode current collector is an aluminum foil subjected to a roughened process
and has a mean surface roughness R_a of less than 0.20 μm .

25 5. The non-aqueous electrolyte battery according to claim 3, wherein the

roughening process is carried out by polishing by blasting.

6. The non-aqueous electrolyte battery according to claim 4, wherein the roughening process is carried out by polishing by blasting.

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7. The non-aqueous electrolyte battery according to claim 2, wherein the lithium iron phosphate has an average particle size of 10 μm or less.

8. The non-aqueous electrolyte battery according to claim 1, wherein the
10 positive electrode active material-containing layer contains a conductive agent, the conductive agent has a BET specific surface area of 15 m^2/g or greater, and the positive electrode active material-containing layer has a filling density of 1.7 g/cm^3 or greater.

9. The non-aqueous electrolyte battery according to claim 2, wherein the
15 positive electrode active material-containing layer contains a conductive agent, the conductive agent has a BET specific surface area of 15 m^2/g or greater, and the positive electrode active material-containing layer has a filling density of 1.7 g/cm^3 or greater.

10. The non-aqueous electrolyte battery according to claim 4, wherein the
20 positive electrode active material-containing layer contains a conductive agent, the conductive agent has a BET specific surface area of 15 m^2/g or greater, and the positive electrode active material-containing layer has a filling density of 1.7 g/cm^3 or greater.

11. The non-aqueous electrolyte battery according to claim 8, wherein the
25 positive electrode active material-containing layer has a filling density of 3.15 g/cm^3 or

less.

12. The non-aqueous electrolyte battery according to claim 9, wherein the positive electrode active material-containing layer has a filling density of 3.15 g/cm^3 or less.

13. The non-aqueous electrolyte battery according to claim 1, wherein carbon is superficially coated on, or adhered to, the positive electrode active material particles.

14. The non-aqueous electrolyte battery according to claim 1, wherein a portion of lithium sites in the positive electrode active material is substituted by a transition metal.

15. A non-aqueous electrolyte battery comprising: a positive electrode, a negative electrode, and a non-aqueous electrolyte, the positive electrode having a positive electrode active material-containing layer that is formed on a positive electrode current collector and contains an olivine-type lithium phosphate as a positive electrode active material, and the negative electrode containing a negative electrode capable of intercalating and deintercalating lithium, characterized in that:

the conductive agent has a BET specific surface area of $15 \text{ m}^2/\text{g}$ or greater, and the positive electrode active material-containing layer has a filling density of 1.7 g/cm^3 or greater.

16. The non-aqueous electrolyte battery according to claim 15, wherein the olivine-type lithium phosphate is lithium iron phosphate.

17. The non-aqueous electrolyte battery according to claim 15, wherein the positive electrode active material-containing layer has a filling density of 3.15 g/cm^3 or less.

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18. The non-aqueous electrolyte battery according to claim 16, wherein the positive electrode active material-containing layer has a filling density of 3.15 g/cm^3 or less.